Chemistry Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab: Which Elements Act Alike? Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Block\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Which elements act alike?***

*Purpose:* To classify five elements into two groups according to the way the elements react with two solutions: sodium carbonate and sodium phosphate.

*Materials:*

* barium nitrate, calcium nitrate, lithium chloride, potassium chloride, strontium nitrate solutions
* sodium carbonate
* sodium phosphate
* 5 test tubes

*Procedure:*

1. Place five test tubes in the test tube rack.
2. Add about 2 mL (40 drops) of each solution to each test tube.
3. Add 1 mL of sodium carbonate to each test tube.
4. Observe the test tubes for at least three minutes. Observe whether any solids formed in the test tubes. Record your observations in Table 1. Write a P if a solid formed or an S if no solid formed. (P=precipitate, S= soluble)
5. Empty test tubes in the sink and rinse out.
6. Repeat steps 2-5 again but adding sodium phosphate to each test tube.

Table 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Element | Symbol | Rxn with Sodium carbonate  Na2CO3 | Rxn with sodium phosphate  Na3PO4 |
| Barium |  |  |  |
| Calcium |  |  |  |
| Lithium |  |  |  |
| Potassium |  |  |  |
| Strontium |  |  |  |

*Data:*

1. Classify the elements into groups in the tables below based on how the elements reacted with the solutions:

Table 2:

|  |  |
| --- | --- |
| Precipitate | Soluble |
|  |  |
|  |  |
|  |  |

1. Two of the elements are listed in the first column of the periodic table. Write their names in Column 1. The other three elements are in the second column. Does your grouping of the five elements in Table 2 agree with their grouping in the periodic table? Why or why not?

Table 3:

|  |  |
| --- | --- |
| Column 1 | Column 2 |
|  |  |
|  |  |
|  |  |

1. Which of the elements are alkali metals? Which are alkaline earth metals?
2. How do alkali metals react with sodium carbonate? With sodium phosphate?
3. How do alkaline earth metals react with sodium carbonate? With sodium phosphate?

6) Give the symbol and charge for the carbonate ion and the phosphate ion.